Collaborative Large Whale Survey 2015(CLaWS)
End-of-Leg 5 Report: 26 October - 9 November2015

Jim Carretta, Cruise Leader

Project Synopsis

The Collaborative Large Whale Survey 2015 (CLaWS) is a joint field effort by Southwest Fisheries Science Center (SWFSC) and Alaska Fisheries Science Center (AFSC). Dave Weller was the SWFSC Chief Scientist and Brenda Rone was the AFSC Chief Scientist. The 4-month survey is devoted to the assessment of several large whale species off the U. S. and Canadian west coast between northern California and Kodiak, Alaska. The Chief Scientist for the project was Dave Weller. Major components of this effort include: (1) the first range-wide assessment of gray whales that summer south of the Aleutian Islands, (2) a dedicated visual line-transect and acoustics survey for right whales in the Gulf of Alaska, and (3) sampling (photographic and biopsy) of blue and fin whales. The work is being supported by SWFSC, AFSC, NOAA Fisheries Office of Science & Technology, and NOAA Fisheries Office of Protected Resources, NOAA Fisheries' Alaska Regional Office and the U.S. Marine Mammal Commission. The survey began 9 July from San Diego amid news coverage and excitement about the large whale research and NOAA Ship *Reuben Lasker* undertaking its first scientific project. Leg 5 concluded in San Diego on 9 November, concluding a very successful 106-day survey (Leg 5 tracklines are shown in Figure 1. Contact Dave.Weller@noaa.gov for additional information.

Leg 5 Overview

The NOAA ship *Reuben Lasker* departed Port Angeles, WA on the afternoon of 26 October, bound for San Diego, CA on 9 November with Jim Carretta as the Cruise Leader. The scientists aboard were Bernardo Alps, Melanie Good, Nick Kellar, Angelica Patyten, Alisa Schulman-Janiger, and Amy Van Cise. The primary goal of the leg was to survey areas along the Washington, Oregon, and California coasts where summering gray whales had been previously documented and obtain photographic identifications and genetic samples. A secondary goal was to survey regions along the central and southern Oregon coasts that had not been intensively surveyed for gray whales in the past, such as the Cape Blanco region of Oregon. An ancillary project on Leg 5 was the retrieval and redeployment of a seafloor acoustic

hydrophone south of Santa Cruz Island that was originally deployed on SWFSC CalCurCEAS 2014. A bug in the firmware of the devices caused the instrument to stop recording after 10-11 months after deployment. Dale Hubbard of Oregon State University joined the ship in Santa Barbara to correct the problem. On 5 November, the ship's command and crew teamed up with Dale to retrieve the seafloor recording package and successfully redeployed the unit near sunset the same day. More information about the ocean sound program can be found in a recent story of a similar retrieval in the Cordell Bank National Marine Sanctuary: http://www.pressdemocrat.com/news/4624856-181/recording-project-seeks-to-help?gallery=4626952

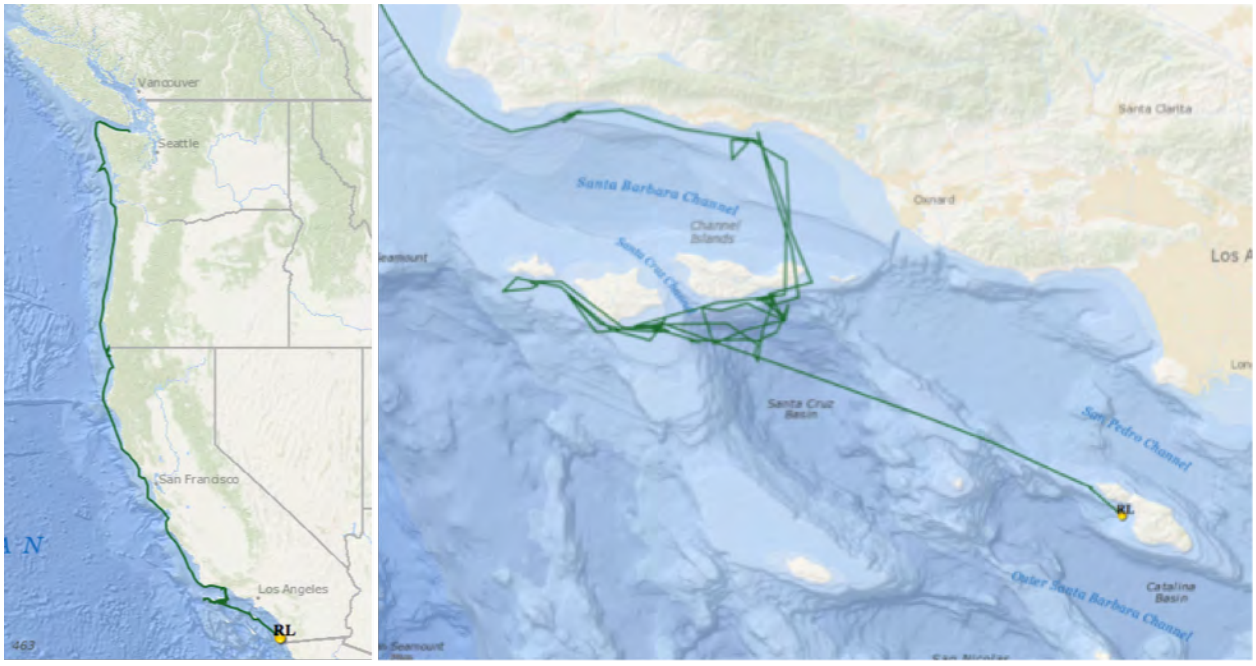

Figure 1. Reuben Lasker ship survey lines for Leg 5 of the 2015 Collaborative Large Whale Survey, including areas around the northern Channel Islands targeted for bottlenose dolphins.

Methods

A combination of modified line-transect survey methods were used from the NOAA ship Reuben Lasker to search for cetaceans in the study area, with a focus on the nearshore side of the ship, since the target species was the gray whale. Two marine mammal observers stood watch on 25x pedestal-mounted binoculars, while a third observer searched by eye and with 7x binoculars and recorded data. A total of seven observers participated in the visual survey and rotated through the three search stations from sunrise to sunset, weather permitting. A rigid-hulled inflatable boat (RHIB) was used to biopsy and photograph cetaceans in nearshore waters that were located by observers on board NOAA Ship *Reuben Lasker*. The *Reuben Lasker* and small boat worked in concert to locate animals, with observers on the Lasker fulfilling the role

of finding additional animals for the RHIB to sample or aiding the RHIB in relocating previously detected animals.

Biopsy samples were collected with a compound crossbow and 7 x 40 mm stainless steel tips with 3 internal barbs. Photographs were taken when whales were sampled to provide documentation of the individual sampled.

Photographs were taken with Canon digital cameras and a 100-400 mm or 200 mm lens. Passes to photograph whales were conducted to document both the left and right lateral sides of the animals; the primary objective was to get the right side to facilitate matching individuals to existing catalogs.

Table 1. Line-transect search effort. Small boat operations are not included in these totals.

Date	Start/End	Latitude	Longitude	On-effort distance	Avg. Beaufort
102615	Port Angeles, WA	No effort, training + ship drills			
102715	0821	N48:20.40	W124:47.14	10.4 nmi	3.5
	1351	N47:59.00	W124:47.88		
102815	0822	N47:00.55	W124:22.37	77.4 nmi	4.3
	1753	N45:32.04	W124:00.78		
102915	0821	N43:23.27	W124:30.67	32.7 nmi	1.9
	1112	N42:50.81	W124:37.18		
103015	0823	N41:43.06	W124:14.00	26.8 nmi	0.6
	1728	N41:24.70	W124:09.50		
103115	0855	N38:58.65	W123:48.57	42.1 nmi	2.9
	1345	N38:24.99	W123:12.51		
110115	0708	N37:06.76	W122:25.42	29.3 nmi	2.6
	1659	N36:14.89	W121:58.98		
110215	1350	N34:26.46	W120:14.13	29.3 nmi	5.1
	1650	N34:22.19	W119:38.37		
110315	0712	N34:22.29	W119:40.68	34.9 nmi	4.8
	1509	N34:03.40	W119:29.34		
110415	0711	N33:57.64	W119:37.32	14.5 nmi	5.2
	1418	N33:58.33	W119:53.13		
110515	0648	N33:56.51	W119:44.48	Acoustic buoy deployment	
	1628	N33:53.90	W119:35.43		
110615	1226	N33:59.32	W120:16.39	13.0 nmi	2.9
	1651	N34:00.37	W120:23.73		
110715	0744	N33:53.41	W120:01.35	6.9 nmi	2.7
	1004	N33:58.79	W120:16.73		
110815	Small boat operations all day around Catalina Island				

Table 2. Number of sightings by species during Leg 5.

Species	**No. of sightings**
Harbor porpoise (*Phocoena phocoena*)	35
Humpback whale (*Megaptera novaeangliae*)	26
Gray whale (*Eschrichtius robustus*)	2
Minke whale (*Balaenoptera acutorostrata*)	2
Fin whale (*Balaenoptera physalus*)	1
Blue whale (*Balaenoptera musculus*)	1
Bottlenose dolphin (*Tursiops truncatus*)	5
Common dolphin, long-beaked (*Delphinus capensis*)	3
Risso's dolphin (*Grampus griseus*)	3
Common dolphin, short-beaked (*Delphinus delphis*)	2
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)	2
Killer whale (*Orcinus orca*)	1
Dall's porpoise (*Phocoenoides dalli*)	1

Figure 2. A uniquely marked Risso's dolphin photographed near Santa Rosa Island, CA

The RHIB vessel was launched on 8 separate days, including on two groups of gray whales in the Cape Flattery, WA and Cape Blanco, OR areas. Biopsy and photo-ID samples were obtained from both groups of gray whales, with a total of 20 unique individuals identified (4 in the Cape Flattery area and 16 near Cape Blanco). A group of transient killer whales were also located near Cape Flattery and one biopsy and many photo identifications were obtained. The RHIB vessel

obtained biopsy and photo ID samples from a fin whale in Monterey Bay, and several species (blue and humpback whales, bottlenose dolphin, and common dolphin) were biopsied around the northern Channel Islands.

Table 3. Number of biopsy samples for Leg 5 by species.

Species	**No. of biopsies**
Blue whale (*Balaenoptera musculus*)	1
Fin whale (*Balaenoptera physalus*)	1
Humpback whale (*Megaptera novaeangliae*)	1
Gray whale (*Eschrichtius robustus*)	9
Common dolphin, long-beaked (*Delphinus capensis*)	8
Killer whale (*Orcinus orca*)	1
Bottlenose dolphin (*Tursiops truncatus*)	24

Acknowledgments: We would like to thank the command and crew of the NOAA ship Reuben Lasker for creating a safe, fun, and cooperative work environment each day of the mission. This type of mission would have been impossible without survey coordinator Annette Henry. We would like to thank all the scientists that participated during Leg 5, some of who were participating in their first long-term cruise in pelagic waters, often under difficult working conditions. The acoustic buoy gear was delivered to the pier in Port Angeles, WA with the assistance of the Olympic National Marine Sanctuary. We thank Kathy Hough for assistance with this project. Dale Hubbard of Oregon State University was critical in the retrieval and redeployment of the acoustic recording package. Shoreside support in preparation for this cruise was provided first and foremost by Annette Henry. Additional support, both conceptual and physical, was provided by: Eric Archer, Lisa Ballance, John Bengtson, Jim Carretta, Phil Clapham, John Durban, Lynn Evans, Paul Fiedler, Terry Henry, Roger Hewitt, Robert Holland, Al Jackson, Kelly Jacovino, Kristen Koch, Jeff Laake, Karen Martien, Jeff Moore, Shannon Rankin, Kelly Robertson, Brenda Rone, Jeremy Rusin, Gaby Serra-Valente, Barb Taylor, Wayne Perryman, Mridula Srinivasan and Cisco Werner. Regional scientific advice was generously offered by: John Calambokidis, Jim Darling, John Ford, Pat Gearin, Dawn Goley, Jeff Jacobsen, Sue Moore, Jan Straley and Bree Witteveen. The CLaWS 2015 project was funded by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, NMFS Office of Science and Technology, NMFS Office of Protected Resources, NMFS Alaska Regional Office and the Marine Mammal Commission.